Certificate nr.: 284/23/05081/CERT Rev.0

Issued on: July 25th, 2025

Written by: Sebastiano Grespan

Type Examination Certificate

CERTIFICATE

License Holder	Layer Electronics s.r.l. S.P. km 5,3 C/da S. Cusumano - 91100 Erice (TP)
Production site:	Layer Electronics s.r.l. S.P. km 5,3 C/da S. Cusumano - 91100 Erice (TP)
Product description:	photovoltaic inverter
Trade mark:	Windsun
This is to certify that representative models of:	GC-200 GC-202 GC-204 GC-206 GC-208 GC-210 GC-212

Given the positive completion of the "type tests" and the declarations issued by the manufacturer, these devices are compliant with the following standards

Reference standard: EN 50549-1: 2019-02
Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network - Generating plants up to and including Type B

cl. 4.4 Normal operating range
cl. 4.5 Immunity to disturbances
cl. 4.6 Active response to frequency deviation
cl. 4.7 Power response to voltage variations and voltage changes
cl. 4.8 EMC and power quality
cl. 4.9 Interface protection
cl. 4.10 Connection and starting to generate electrical power
cl. 4.11 Ceasing and reduction of active power on set point
cl. 4.13 Requirements regarding single fault tolerance of interface protection system and interface switch

Certification Body

ZUCCATO ALESSANDRO
31.07.2025 14:28:24
GMT+02:00

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Signatory of EA, IAF Mutual Recognition Agreements
Membro degli Accordi di Mutuo Riconoscimento EA e IAF

Type Examination Certificate

The following generators comply with the requirements of the standard EN 50549-1: 2019-02				
Manufacturer	Layer Electronics s.r.l. S.P. km 5,3 C/da S. Cusumano - 91100 Erice (TP)			
Type of equipment	converter for storage system			
Brand	Windsun			
User side connection	☒ Single-phase Frequency: 50Hz Voltage: 230V		☐ Three-phase	
Energia primaria utilizzata Primary used energy	☒ Solar ☐ Wind ☐ CHP		☐ Storage ☐ Hydro ☐ Other:	
Generator model	GC-200	GC-202	GC-204	GC-206
Rated power	2 kW – 2 kVA	3 kW – 3 kVA	4 kW – 4 kVA	6 kW – 6 kVA
Generator model	GC-208	GC-210	GC-212	---
Rated power	8 kW – 8 kVA	10 kW – 10 kVA	12 kW – 12 kVA	---
Characteristics of the interface protection system				
Manufacturer				
Model				
Type	☐ Integrated ☒ Not integrated			
Note	The component is installed on the final plant.			
Characteristics of the static converter				
Static converter model	GC-200	GC-202	GC-204	GC-206
Static converter manufacturer	Layer Electronics s.r.l.	Layer Electronics s.r.l.	Layer Electronics s.r.l.	Layer Electronics s.r.l.
Firmware version	CTR_FERS18_1.4	CTR_FERS18_1.4	CTR_FERS18_1.4	CTR_FERS18_1.4
Static converter rated power (P_{INV})	2 kW – 2 kVA	3 kW – 3 kVA	4 kW – 4 kVA	6 kW – 6 kVA
Static converter model	GC-208	GC-210	GC-212	---
Static converter manufacturer	Layer Electronics s.r.l.	Layer Electronics s.r.l.	Layer Electronics s.r.l.	---
Firmware version	CTR_FERS18_1.4	CTR_FERS18_1.4	CTR_FERS18_1.4	---
Static converter rated power (P_{INV})	8 kW – 8 kVA	10 kW – 10 kVA	12 kW – 12 kVA	---

EN 50549-1:2019-02 Annex B - Evaluated protective function and operational capabilities			
Clause of EN 50549-1:2019	**Applicable Clause (EN 50549-10:2022)**	**Remarks, optional modes and constraints**	**Verdict**
4.4.2 Operating frequency range	5.2.1 Frequency operating range		PASS
4.4.3 Minimal requirement for active power delivery at underfrequency	5.2.1 Frequency operating range		PASS
4.4.4 Continuous operating voltage range	5.2.2 Voltage operating range		PASS
4.5.2 Rate of change of frequency (ROCOF) immunity	5.3.1 Immunity to disturbances - Rate of change of frequency (ROCOF)		PASS
4.5.3.2 Generating plant with non-synchronous generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)		PASS
4.5.3.3 Generating plant with synchronous generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)		PASS
4.5.4 Over-voltage ride through (OVRT)	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)		PASS
4.6.1 Power response to overfrequency	5.4 Active response to frequency deviation		PASS
4.6.2 Power response to underfrequency	5.4 Active response to frequency deviation		PASS
4.7.2.2 Voltage support by reactive power, Capabilities	5.5.1 Power capabilities assessment		PASS
4.7.2.3 Voltage support by reactive power, Control modes	5.5.2 Voltage support by reactive power - test to determine the reactive power control modes	See 4.7.2.3.x subparagraph	PASS
4.7.2.3.2 Set point control modes	5.5.2.3 Verification procedure for Set point control		PASS
4.7.2.3.3 Voltage related control modes	5.5.2.5 Verification procedure for power related control modes for reactive power		PASS
4.7.2.3.4 Power related control mode	5.5.2.5 Verification procedure for power related control modes for reactive power		PASS
4.7.4.2.2 Zero current mode for converter connected generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)		PASS
EN 50549-1:2019 4.9.3 Requirements on voltage and frequency protection	5.8.3 Verification procedure for generating plants to be connected to a LV distribution network with Interface protection as internal device		PASS
4.9.4 Means to detect island situation	5.8.6 Islanding detection	Reactive power injection	PASS
4.10.2 Automatic reconnection after tripping	5.9.3 Automatic reconnection after tripping		PASS
4.10.3 Starting to generate electrical power	5.9.4 Starting to generate electrical power		PASS

4.11.1 Ceasing active power	5.10 Active power reduction on set point		PASS
4.11.2 Reduction of active power on set point	5.10 Active power reduction on set point		PASS
4.12 Remote information exchange	5.11 Remote information exchange		PASS
EN 50549-1:2019, 4.13 single fault tolerance of interface protection system and interface switch	5.12 Requirements regarding single fault tolerance of interface protection system and interface switch		PASS

References of the laboratories that carried out the tests and related test reports		
Chosen method	☒ Tests performed by an accredited laboratory	☐ Tests carried out under the supervision of a certification body
Test reports	EN 50549-1: 2019-02 - Test report n° 284/23/03602/ER R00 Date: 2023-11-22 IEC 62116 test – Islanding prevention measures - Test report n° 287/23/04232/ER R00 Date: 2024-06-20	
Issued by No. of accreditation Ref. Accreditation body	Accredited laboratory: Kiwa Creiven S.r.l. Corso Spagna 12 – 35127 Padova – Italy n.: 00233 (old number 0259) Accredia	

Date, signature and references of the certification body		
Reference technical report	284/23/05083/ER R00- date: 2025-07-21 Relativamente ai generatori oggetto del presente certificato, sono state verificate: - l'esistenza dei fascicoli tecnici del costruttore richiesti dalle direttive EMC e LVD - la presenza della marcatura CE - la presenza della "Dichiarazione UE di conformità" alle direttive/regolamenti applicabili Limitatamente ai generatori sottoposti a Prove di Tipo citati nei rapporti di prova precedentemente menzionati, sono stati registrati i parametri relativi alle specifiche di connessione e alle funzioni di regolazione e sono state inoltre verificate le configurazioni e i settaggi dei dispositivi di protezione presenti. Per i generatori non verificati mediante Prove di Tipo, il costruttore dichiara di utilizzare gli stessi parametri di connessione e regolazione e di settare i dispositivi di protezione in modo opportuno. L'effettiva esecuzione di quanto dichiarato dal costruttore non è compresa nella responsabilità dell'Ente di Certificazione *Regarding the generators covered by this certificate, the following have been verified:* - *the existence of the manufacturer's technical files required by the EMC and LVD directives* - *the presence of the CE marking* - *the presence of the "EU declaration of conformity" to the applicable directives/regulations* *Limited to the generators subjected to Type Tests mentioned in the previously listed test reports, the parameters relating to the connection specifications and the regulation functions were recorded and the configurations and settings of the protection devices present were also verified. For generators not verified by Type Tests, the manufacturer declares to use the same connection and regulation parameters and to set the protection devices in an appropriate manner. The effective execution of what is declared by the manufacturer is not included in the responsibility of the Certification Body*	
Certification body	Kiwa Creiven S.r.l. C.so Spagna 12, 35127 – Padova, Italy Tel. +39 049 870 4036 - info.creiven@kiwa.com www.kiwacreiven.it	
Place, Date, Signature	Padova, 25-07-2025	Alessandro Zuccato (Director of Kiwa Creiven)